

DOCUMENT RESUME

ED 063 555

CG 007 248

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TITLE An Index and Procedure for Readmitting the
Academically Dismissed Student.
INSTITUTION Kent State Univ., Ohio.
PUB DATE 69
NOTE 17p.
EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS *Academic Failure; *College Admission; Colleges;
*College Students; *Disqualification; *Formative
Evaluation

ABSTRACT

An index and procedure were sought which would enable university officials to establish the probable academic success of each student seeking readmission after academic dismissal. A 2.20 critical GPA index and procedure for readmitting students was empirically derived from the performance of 1,460 readmitted students. The critical index technique was found to be a valuable research procedure which could be used to reflect past policy and guide current decisions. The technique is independent of units, i.e., quarter or semester hours and can be used by individuals with limited knowledge of mathematical skills. Further, it can facilitate the development of hypotheses when used in conjunction with other variables. (Author)

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An Index and Procedure for Readmitting the Academically Dismissed Student

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Objectives of the Inquiry

Each year thousands of students seek readmission to universities from which they were academically dismissed. The university must then make a decision regarding the student's new request for admission. Generally, a time period of at least one term had been prescribed by university policy within which a student was not eligible for re-admission. After this interim period many students decide to return to the university, each with a special story and rationale for his future academic success. The object of this inquiry was to seek an index and procedure which might aid the university officials decide the probable academic success of each student seeking readmission.

Methods and/or Techniques

Although the readmission process affects the lives of many students, very little research has been carried out with regard to the topic. Previous research by these writers, however, has brought attention to the grade point average at the time of dismissal as an important variable. Although our research interest has been focused on both academic and non-academic variables, a decision making rule was needed quickly. Thus, the following rationale was investigated in hopes that an index may be established and applied quickly, since studies of this nature are longitudinal and the multivariable research results would not be available for several years. Also, the

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data necessary to establish a critical index would serve as comparative data for the effects of studies in progress.

Data Sources

The value of the readmission chart was investigated for its ability to discriminate academically successful and unsuccessful students by plotting each category of student on the critical index chart based on their GPA and number of credit hours at dismissal. Samples were selected for this purpose based on the availability and/or quality of the historic records obtained from four college deans representing a period 1965 to 1969. It should be noted that these students were readmitted solely on the basis of their request and with the permission of the academic deans. Thus, the requirements for readmission were not prohibitive and restricted few students for a second chance at higher education.

Results and/or Conclusions

The four samples were each considered separately; nonetheless, the results were very similar. In general, a large number of freshmen were dismissed after returning for one term (refer to Table 1 and Table 2) with the range of dismissals from 79% to 94%. The range for sophomores was 62% to 79%. The range for juniors was 44% to 56%. And the range for seniors was 0% to 40%. Thus, the farther along a student was in his college career at the time of his academic dismissal the better were his chances of success upon readmission. Approximately 10% to 20% ultimately were graduated. From 35% to 50% were dismissed again upon readmission. About 15% to 30% did not return after readmission; hence, it may be assumed they transferred to another university. Some students were still attending,

but the remainder dropped out of school even though they had not been dismissed again.

If cumulative GPA, grade point average, at dismissal is predictive, then some index or critical value may exist which optimally separates successful and unsuccessful readmitted students. Based on this hypothesis a chart was constructed displaying units of credit hours ranging from 1 to 200 hours on one dimension and GPA ranging from 0 to 2.00 in .05 increments along the other dimension. Two indices were then derived for each cell of this two dimensional chart. First, the minimum required GPA needed during each term after readmission necessary to establish the minimum GPA required for graduation was computed. For example, if a 2.00 GPA is required for graduation at the end of 200 credit hours, then 400 quality points must be earned. The earned quality points are equal to the actual earned GPA multiplied by the actual earned credit hours. Now, the minimum quality points, in this case 400, less the earned quality points at the time of dismissal provides an indication of the quality point deficit which must be overcome to achieve graduation. It is then possible to calculate the minimal GPA required each and every term thereafter to reach criterion by dividing the needed quality points by the number of credit hours needed for graduation. Second, the difference between the cumulative GPA at dismissal and the minimum required GPA needed to reach criterion was computed. Hence, two indices were computed for the purpose of investigating their ability to discriminate successful and unsuccessful readmitted students -- the first was a minimum performance GPA and the second was a difference between GPAs.

Given this two dimensional chart the academic performance of

the four samples of readmitted students could then be plotted. The plot for the Arts and Science sample follows Table 2 and shows some of the procedures used to establish a critical index. In particular, the most valuable approach was obtained by drawing iso-contours between cells on the chart which contained the same index.

A solid black line is shown connecting cells on the Arts and Science Chart which indicate that individuals who would be placed in this cell based on their GPA and number of credit hours at dismissal need a 2.10 GPA each quarter to reach criterion or be graduated at the end of 200 credit hours. A dotted black line shows those cells which require a .80 difference between cumulative GPA at dismissal and the required GPA performance needed for graduation, i.e., the amount of needed improvement over the academic performance prior to dismissal.

If successful readmittees are plotted as stars and unsuccessful readmittees as dots as in the Arts and Science College Chart, then the light black line showing a minimum 2.20 minimum GPA performance required after readmission appears to optimize the discrimination between regions or clusters of stars with that of dots. More rigorous mathematically determined curves may be fitted to the data to increase this separation. The more rigorous approaches, however, must be considered in relation to their effectiveness when compared to the ease of using an empirically derived critical index such as the 2.20 established for this sample.

Educational or Scientific Importance of the Study

The readmission or critical index chart is a very simple technique which has done at least as well as other more sophisticated multivariate procedures. This chart technique is independent of the

credit hour units and, thus, may be used for universities regardless of their school calendar. Data from mature samples may be plotted to reflect previous policy and/or academic performance of particular samples. Samples plotted overtime may suggest trends such as the effects attributed to changing academic deans, for example. Other academic and non-academic variables or scores may be plotted for groups of students to aid in the development of hypotheses or to suggest more complex studies. Perhaps most importantly, however, is the knowledge that each university, college, school, or whatever subset has unique policies and students and this technique readily reflects the performance or efficiency of both. Further, if a dean can look at a chart when counseling a student and show that student how other students have done given that students GPA and number of credit hours at dismissal, then the dean and the student may be able to come to a decision based on the experience or success of previously readmitted students.

Table 1

Four Samples of Readmitted Students by College and their
Subsequent Academic Performance

Variable	Arts & Sciences	Business	Education	Fine & Professional Arts
	Percent			
Graduated	9	9	20	9
Dismissed Again	38	21	52	34
Presently Attending	6	70 *	28 *	9
Never Returned	24			16
Dropped Out on Pro	20			19
Dropped Out off Pro	4			13
Sample Size	525	575	212	148

* Breakdowns for these four figures were not available.

Table 2

Four Samples of Readmitted Students by Class Level and their
Subsequent Academic Performance

Class Level	Arts & Sciences	Business	Education	Fine & Professional Arts
	Percent			
Freshmen				
Dismissed	92	79	89	94
Graduated	8	21	11	6
Sophomore				
Dismissed	72	73	62	79
Graduated	22	27	38	21
Junior				
Dismissed	56	48	46	44
Graduated	44	52	54	56
Senior				
Dismissed	46	40	100	100
Graduated	54	60	0	
Sample Size	245	176	152	63

THE UNIVERSITY OF CHICAGO

JUNIORS

DISMISSED AGAIN
GRADUATED

All students above the black line need to average 2.10 or less for all work remaining until they reach 200 hours and a 2.00 average.
All students below the line need greater than 2.10.

The broken line indicates a .80 difference between cumulative GPA at dismissal and the minimum required GPA.

These are students who were dismissed again after readmission

These are students who were readmitted and graduated

This is a sample of 525 students readmitted to the College of Arts & Sciences, Kent State University from Winter, 1965 through Fall, 1967.

Action After Being Granted Readmission	Number	Percent
Graduated.....	44	8.4%
Dismissed again.....	201	38.3%
Presently attending.....	30	5.7%
Never returned.....	128	24.4%
Returned, completed more credit hours, remained on probation and then dropped out.....	100	19.9%
Returned, completed more credit hours, were removed from probation, and then dropped out.....	22	4.2%
TOTAL	525	100.0%

SENIORS

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TOTAL	525	100.0%

COLLEGE OF ARTS & SCIENCES

REQUIRED GPA NEEDED ON REMAINING HOUR TO ATTAIN A 2.0 AVERAGE AT 200 HOURS

Quarter Chart

GPA	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
1	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
3	1.96	1.91	1.86	1.81	1.76	1.71	1.66	1.61	1.56	1.51	1.46	1.41	1.36	1.31	1.26	1.21	1.16	1.11	1.06	1.01
5	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02
7	1.98	1.93	1.88	1.83	1.78	1.73	1.68	1.62	1.57	1.52	1.47	1.42	1.37	1.32	1.27	1.22	1.17	1.12	1.07	1.02
9	2.05	2.05	2.05	2.05	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
11	2.00	1.95	1.90	1.85	1.79	1.74	1.69	1.64	1.59	1.54	1.49	1.44	1.38	1.33	1.28	1.23	1.18	1.13	1.08	1.03
13	2.07	2.07	2.07	2.07	2.07	2.06	2.06	2.06	2.06	2.05	2.05	2.05	2.05	2.05	2.05	2.04	2.04	2.04	2.04	2.04
15	2.02	1.97	1.92	1.87	1.81	1.76	1.71	1.66	1.61	1.55	1.50	1.45	1.40	1.35	1.30	1.24	1.19	1.14	1.09	1.04
17	2.09	2.09	2.09	2.08	2.08	2.08	2.08	2.08	2.07	2.07	2.07	2.07	2.06	2.06	2.06	2.05	2.05	2.05	2.05	2.05
19	2.11	2.11	2.11	2.10	2.10	2.10	2.10	2.09	2.09	2.09	2.08	2.08	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.07
21	2.06	2.01	1.96	1.90	1.85	1.80	1.75	1.69	1.64	1.59	1.53	1.48	1.43	1.38	1.32	1.27	1.22	1.16	1.11	1.06
23	2.14	2.13	2.13	2.13	2.12	2.12	2.11	2.11	2.11	2.10	2.10	2.10	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09
25	2.09	2.03	2.00	1.95	1.89	1.84	1.78	1.73	1.68	1.62	1.57	1.51	1.46	1.41	1.35	1.30	1.24	1.19	1.14	1.08
27	2.16	2.15	2.15	2.15	2.14	2.14	2.13	2.13	2.13	2.12	2.12	2.11	2.11	2.11	2.10	2.10	2.09	2.09	2.09	2.09
29	2.13	2.08	2.02	1.97	1.91	1.86	1.80	1.75	1.69	1.64	1.58	1.53	1.48	1.42	1.37	1.31	1.26	1.20	1.15	1.09
31	2.20	2.15	2.09	2.03	1.98	1.92	1.86	1.81	1.75	1.69	1.64	1.58	1.53	1.47	1.41	1.36	1.30	1.24	1.19	1.13
33	2.28	2.27	2.26	2.26	2.25	2.24	2.24	2.23	2.22	2.21	2.21	2.20	2.19	2.19	2.18	2.17	2.16	2.16	2.16	2.16
35	2.23	2.17	2.11	2.06	2.00	1.94	1.89	1.83	1.77	1.71	1.66	1.60	1.54	1.49	1.43	1.37	1.31	1.26	1.20	1.14
37	2.30	2.30	2.29	2.28	2.27	2.27	2.26	2.25	2.24	2.23	2.23	2.22	2.21	2.20	2.20	2.19	2.18	2.17	2.16	2.16
39	2.25	2.20	2.14	2.08	2.02	1.97	1.91	1.85	1.79	1.73	1.68	1.62	1.56	1.50	1.45	1.39	1.33	1.27	1.21	1.16
41	2.33	2.32	2.31	2.31	2.30	2.29	2.28	2.27	2.26	2.25	2.25	2.24	2.23	2.22	2.21	2.20	2.19	2.18	2.17	2.16
43	2.28	2.22	2.16	2.11	2.05	1.99	1.93	1.87	1.81	1.75	1.70	1.64	1.58	1.52	1.46	1.40	1.35	1.29	1.23	1.17
45	2.36	2.35	2.34	2.33	2.32	2.31	2.30	2.29	2.28	2.27	2.27	2.26	2.25	2.24	2.23	2.22	2.21	2.20	2.19	2.18
47	2.31	2.25	2.19	2.13	2.07	2.01	1.95	1.89	1.83	1.78	1.72	1.66	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18
49	2.39	2.38	2.37	2.36	2.35	2.34	2.33	2.32	2.31	2.30	2.29	2.28	2.27	2.26	2.25	2.24	2.23	2.22	2.21	2.20
51	2.41	2.40	2.39	2.38	2.37	2.36	2.35	2.34	2.33	2.32	2.31	2.30	2.29	2.28	2.27	2.26	2.25	2.24	2.23	2.22
53	2.44	2.43	2.42	2.41	2.40	2.39	2.38	2.37	2.36	2.35	2.34	2.33	2.32	2.31	2.30	2.29	2.28	2.27	2.26	2.25
55	2.47	2.46	2.45	2.44	2.43	2.42	2.41	2.40	2.39	2.38	2.37	2.36	2.35	2.34	2.33	2.32	2.31	2.30	2.29	2.28
57	2.50	2.49	2.48	2.47	2.46	2.45	2.44	2.43	2.42	2.41	2.40	2.39	2.38	2.37	2.36	2.35	2.34	2.33	2.32	2.31
59	2.53	2.52	2.51	2.50	2.49	2.48	2.47	2.46	2.45	2.44	2.43	2.42	2.41	2.40	2.39	2.38	2.37	2.36	2.35	2.34
61	2.58	2.57	2.56	2.55	2.54	2.53	2.52	2.51	2.50	2.49	2.48	2.47	2.46	2.45	2.44	2.43	2.42	2.41	2.40	2.39
63	2.62	2.61	2.60	2.59	2.58	2.57	2.56	2.55	2.54	2.53	2.52	2.51	2.50	2.49	2.48	2.47	2.46	2.45	2.44	2.43
65	2.67	2.66	2.65	2.64	2.63	2.62	2.61	2.60	2.59	2.58	2.57	2.56	2.55	2.54	2.53	2.52	2.51	2.50	2.49	2.48
67	2.70	2.69	2.68	2.67	2.66	2.65	2.64	2.63	2.62	2.61	2.60	2.59	2.58	2.57	2.56	2.55	2.54	2.53	2.52	2.51
69	2.74	2.72	2.70	2.68	2.66	2.64	2.62	2.61	2.59	2.57	2.55	2.53	2.51	2.49	2.47	2.45	2.43	2.41	2.39	2.37
71	2.69	2.62	2.55	2.48	2.41	2.34	2.28	2.21	2.14	2.07	2.00	1.93	1.86	1.79	1.72	1.66	1.59	1.52	1.45	1.38

CPA 1.05 1.10 1.15 1.20 1.25 1.30 1.35 1.40 1.45 1.50 1.55 1.60 1.65 1.70 1.75 1.80 1.85 1.90 1.95 2.00



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61	2.77	2.70	2.62	2.55	2.48	2.41	2.34	2.27	2.20	2.13	2.06	1.99	1.91	1.84	1.77	1.70	1.63	1.56	1.49	1.42	
63	2.81	2.73	2.66	2.59	2.52	2.45	2.37	2.30	2.23	2.16	2.09	2.01	1.94	1.87	1.80	1.73	1.65	1.58	1.51	1.44	
65	2.85	2.77	2.70	2.63	2.55	2.48	2.41	2.34	2.26	2.19	2.12	2.04	1.97	1.90	1.82	1.75	1.68	1.61	1.53	1.46	
67	2.89	2.81	2.74	2.67	2.59	2.52	2.44	2.37	2.30	2.22	2.15	2.07	2.00	1.93	1.85	1.78	1.70	1.63	1.55	1.48	
69	2.93	2.86	2.78	2.71	2.63	2.55	2.48	2.41	2.33	2.26	2.18	2.11	2.03	1.95	1.88	1.80	1.73	1.65	1.58	1.50	
71	2.97	2.90	2.82	2.75	2.67	2.59	2.52	2.44	2.37	2.29	2.21	2.14	2.06	1.98	1.91	1.83	1.76	1.68	1.60	1.53	
73	3.02	2.95	2.87	2.79	2.71	2.63	2.56	2.48	2.40	2.33	2.25	2.17	2.09	2.02	1.94	1.86	1.78	1.71	1.63	1.55	
75	3.07	2.99	2.91	2.83	2.76	2.68	2.60	2.52	2.44	2.36	2.28	2.20	2.13	2.05	1.97	1.89	1.81	1.73	1.65	1.57	
77	3.12	3.04	2.96	2.88	2.80	2.72	2.64	2.56	2.48	2.40	2.32	2.24	2.16	2.08	2.00	1.92	1.84	1.76	1.68	1.60	
79	3.17	3.09	3.01	2.93	2.85	2.76	2.68	2.60	2.52	2.44	2.36	2.28	2.20	2.11	2.03	1.95	1.87	1.79	1.71	1.63	
81	3.22	3.14	3.06	2.98	2.89	2.81	2.73	2.65	2.56	2.48	2.40	2.31	2.23	2.15	2.07	1.98	1.90	1.82	1.74	1.65	
83	3.28	3.19	3.11	3.03	2.94	2.85	2.77	2.69	2.61	2.52	2.44	2.35	2.27	2.18	2.09	2.02	1.93	1.85	1.76	1.68	
85	3.33	3.25	3.16	3.08	2.99	2.91	2.82	2.74	2.65	2.56	2.48	2.39	2.31	2.22	2.14	2.05	1.97	1.88	1.79	1.71	
87	3.40	3.30	3.22	3.13	3.04	2.95	2.87	2.78	2.70	2.61	2.52	2.43	2.35	2.26	2.17	2.09	2.00	1.91	1.83	1.74	
89	3.45	3.36	3.27	3.18	3.10	3.01	2.92	2.83	2.74	2.65	2.57	2.48	2.39	2.30	2.21	2.12	2.04	1.95	1.86	1.77	
91	3.51	3.42	3.33	3.24	3.15	3.06	2.97	2.88	2.79	2.70	2.61	2.52	2.43	2.34	2.25	2.16	2.07	1.98	1.89	1.80	
93	3.58	3.49	3.39	3.30	3.21	3.12	3.03	2.94	2.84	2.75	2.66	2.57	2.48	2.39	2.30	2.21	2.12	2.03	1.94	1.85	
95	3.64	3.55	3.46	3.36	3.27	3.18	3.09	2.99	2.90	2.80	2.71	2.62	2.52	2.43	2.34	2.24	2.15	2.06	1.96	1.87	
97	3.71	3.62	3.52	3.43	3.33	3.24	3.14	3.05	2.95	2.86	2.76	2.67	2.57	2.48	2.38	2.29	2.19	2.10	2.00	1.90	
99	3.76	3.67	3.57	3.47	3.37	3.27	3.17	3.07	2.97	2.87	2.77	2.67	2.57	2.47	2.37	2.27	2.17	2.07	1.97	1.87	
101	3.84	3.74	3.64	3.54	3.43	3.33	3.23	3.13	3.03	2.93	2.83	2.73	2.63	2.53	2.43	2.33	2.23	2.13	2.03	1.93	
103	3.94	3.84	3.74	3.64	3.54	3.43	3.33	3.23	3.13	3.03	2.93	2.83	2.73	2.63	2.53	2.43	2.33	2.23	2.13	2.02	
105	4.02	3.92	3.81	3.71	3.61	3.51	3.40	3.30	3.20	3.09	2.99	2.89	2.78	2.68	2.58	2.47	2.37	2.27	2.16	2.06	
107	4.11	4.00	3.89	3.78	3.67	3.56	3.45	3.34	3.23	3.12	3.01	2.90	2.79	2.68	2.57	2.46	2.35	2.24	2.13	2.02	
109	4.19	4.09	3.98	3.87	3.76	3.65	3.54	3.43	3.32	3.21	3.10	2.99	2.88	2.77	2.66	2.55	2.44	2.33	2.21	2.10	
111	4.29	4.18	4.07	3.96	3.85	3.74	3.63	3.52	3.41	3.30	3.19	3.08	2.97	2.86	2.75	2.64	2.53	2.42	2.31	2.20	
113	4.38	4.27	4.16	4.04	3.93	3.82	3.71	3.60	3.48	3.37	3.26	3.15	3.04	2.92	2.81	2.70	2.58	2.47	2.36	2.25	
115	4.48	4.37	4.25	4.14	4.02	3.91	3.79	3.68	3.56	3.45	3.33	3.22	3.10	2.99	2.87	2.76	2.64	2.53	2.41	2.30	
117	4.59	4.47	4.35	4.24	4.12	4.00	3.88	3.76	3.65	3.53	3.41	3.29	3.17	3.06	2.94	2.82	2.71	2.59	2.47	2.35	

57	2.33	2.34	2.34	2.32	2.30	2.28	2.26	2.24	2.22	2.20	2.18	2.16	2.14	2.12	2.10	2.08	2.06	2.04	2.02	2.00	1.93
59	1.33	1.24	1.19	1.12	1.05	0.98	0.91	0.84	0.77	0.70	0.63	0.56	0.49	0.42	0.35	0.28	0.21	0.14	0.07	0.00	1.41
61	2.40	2.34	2.36	2.33	2.31	2.29	2.27	2.25	2.23	2.21	2.19	2.17	2.15	2.13	2.10	2.08	2.06	2.04	2.02	2.00	1.41
63	1.35	1.24	1.21	1.13	1.06	0.99	0.92	0.85	0.78	0.71	0.64	0.57	0.50	0.43	0.35	0.28	0.21	0.14	0.07	0.00	1.39
65	2.42	2.39	2.37	2.35	2.33	2.31	2.29	2.26	2.24	2.22	2.20	2.18	2.15	2.12	2.11	2.09	2.07	2.04	2.02	2.00	1.37
67	1.37	1.29	1.22	1.15	1.08	1.01	0.94	0.86	0.79	0.72	0.65	0.58	0.50	0.43	0.36	0.29	0.22	0.14	0.07	0.00	1.35
69	2.44	2.41	2.39	2.37	2.34	2.32	2.30	2.28	2.25	2.23	2.21	2.18	2.16	2.14	2.11	2.09	2.07	2.05	2.02	2.00	1.33
71	1.39	1.31	1.24	1.17	1.09	1.02	0.95	0.88	0.80	0.73	0.66	0.58	0.51	0.44	0.36	0.29	0.22	0.15	0.07	0.00	1.31
73	2.46	2.43	2.41	2.39	2.36	2.34	2.31	2.29	2.26	2.24	2.22	2.19	2.17	2.16	2.13	2.11	2.08	2.05	2.02	2.00	1.29
75	1.41	1.33	1.26	1.19	1.11	1.04	0.96	0.89	0.81	0.74	0.67	0.59	0.52	0.44	0.37	0.30	0.23	0.15	0.07	0.00	1.27
77	2.48	2.45	2.43	2.40	2.38	2.35	2.33	2.30	2.28	2.25	2.23	2.20	2.18	2.15	2.13	2.10	2.08	2.05	2.03	2.00	1.25
79	1.43	1.35	1.28	1.21	1.13	1.05	0.98	0.90	0.83	0.75	0.68	0.60	0.53	0.45	0.38	0.31	0.24	0.16	0.08	0.00	1.23
81	2.50	2.47	2.45	2.42	2.40	2.37	2.34	2.32	2.29	2.26	2.24	2.21	2.19	2.17	2.14	2.11	2.09	2.06	2.03	2.00	1.21
83	1.45	1.37	1.30	1.23	1.15	1.07	1.00	0.92	0.85	0.77	0.70	0.63	0.55	0.47	0.40	0.33	0.25	0.17	0.09	0.00	1.19
85	2.52	2.49	2.47	2.44	2.42	2.39	2.36	2.33	2.30	2.28	2.25	2.22	2.20	2.18	2.16	2.13	2.10	2.07	2.04	2.00	1.17
87	1.47	1.39	1.32	1.25	1.17	1.09	1.02	0.94	0.87	0.79	0.72	0.64	0.57	0.49	0.42	0.34	0.26	0.18	0.09	0.00	1.15
89	2.54	2.51	2.49	2.46	2.43	2.40	2.37	2.34	2.32	2.29	2.26	2.23	2.21	2.18	2.16	2.13	2.10	2.07	2.04	2.00	1.13
91	1.49	1.41	1.34	1.27	1.19	1.11	1.04	0.96	0.89	0.81	0.74	0.66	0.59	0.51	0.44	0.36	0.28	0.19	0.10	0.00	1.11
93	2.56	2.53	2.51	2.48	2.45	2.42	2.39	2.36	2.33	2.30	2.28	2.25	2.22	2.20	2.17	2.14	2.11	2.08	2.04	2.00	1.09
95	1.51	1.43	1.36	1.29	1.21	1.13	1.06	0.98	0.91	0.83	0.76	0.68	0.61	0.53	0.46	0.38	0.29	0.20	0.10	0.00	1.07
97	2.58	2.55	2.53	2.50	2.47	2.44	2.41	2.38	2.35	2.32	2.29	2.26	2.23	2.21	2.18	2.15	2.12	2.09	2.05	2.00	1.05
99	1.53	1.45	1.38	1.31	1.23	1.15	1.08	1.00	0.93	0.85	0.78	0.70	0.63	0.55	0.48	0.39	0.30	0.20	0.10	0.00	1.03
101	2.60	2.57	2.55	2.52	2.49	2.46	2.43	2.40	2.37	2.34	2.31	2.28	2.25	2.22	2.20	2.17	2.14	2.11	2.06	2.00	1.01
103	1.55	1.47	1.40	1.33	1.25	1.17	1.10	1.02	0.95	0.87	0.80	0.72	0.65	0.57	0.50	0.42	0.33	0.23	0.12	0.00	99
105	2.62	2.59	2.57	2.54	2.51	2.48	2.45	2.42	2.39	2.36	2.33	2.30	2.27	2.24	2.21	2.18	2.15	2.10	2.05	2.00	97
107	1.57	1.49	1.42	1.35	1.27	1.19	1.12	1.04	0.97	0.89	0.82	0.74	0.67	0.59	0.52	0.44	0.35	0.25	0.14	0.00	95
109	2.64	2.61	2.59	2.56	2.53	2.50	2.47	2.44	2.41	2.38	2.35	2.32	2.29	2.26	2.23	2.20	2.17	2.11	2.06	2.00	93
111	1.59	1.51	1.44	1.37	1.29	1.21	1.14	1.06	0.99	0.91	0.84	0.76	0.69	0.61	0.54	0.46	0.37	0.27	0.16	0.00	91
113	2.66	2.63	2.61	2.58	2.55	2.52	2.49	2.46	2.43	2.40	2.37	2.34	2.31	2.28	2.25	2.22	2.19	2.12	2.06	2.00	89
115	1.61	1.53	1.46	1.39	1.31	1.23	1.16	1.08	1.01	0.93	0.86	0.78	0.71	0.63	0.56	0.48	0.39	0.29	0.18	0.00	87
117	2.68	2.65	2.63	2.60	2.57	2.54	2.51	2.48	2.45	2.42	2.39	2.36	2.33	2.30	2.27	2.24	2.21	2.14	2.07	2.00	85
119	1.63	1.55	1.48	1.41	1.33	1.25	1.18	1.10	1.03	0.95	0.88	0.80	0.73	0.65	0.58	0.50	0.41	0.31	0.20	0.00	83
121	2.70	2.67	2.65	2.62	2.59	2.56	2.53	2.50	2.47	2.44	2.41	2.38	2.35	2.32	2.29	2.26	2.23	2.16	2.09	2.00	81
123	1.65	1.57	1.50	1.43	1.35	1.27	1.20	1.12	1.05	0.97	0.90	0.82	0.75	0.67	0.60	0.52	0.43	0.33	0.22	0.00	79
125	2.72	2.69	2.67	2.64	2.61	2.58	2.55	2.52	2.49	2.46	2.43	2.40	2.37	2.34	2.31	2.28	2.25	2.18	2.11	2.00	77
127	1.67	1.59	1.52	1.45	1.37	1.29	1.22	1.14	1.07	0.99	0.92	0.84	0.77	0.69	0.62	0.54	0.45	0.35	0.24	0.00	75
129	2.74	2.71	2.69	2.66	2.63	2.60	2.57	2.54	2.51	2.48	2.45	2.42	2.39	2.36	2.33	2.30	2.27	2.20	2.13	2.00	73
131	1.69	1.61	1.54	1.47	1.39	1.31	1.24	1.16	1.09	1.01	0.94	0.86	0.79	0.71	0.64	0.56	0.47	0.37	0.26	0.00	71
133	2.76	2.73	2.71	2.68	2.65	2.62	2.59	2.56	2.53	2.50	2.47	2.44	2.41	2.38	2.35	2.32	2.29	2.22	2.15	2.00	69
135	1.71	1.63	1.56	1.49	1.41	1.33	1.26	1.18	1.11	1.03	0.96	0.88	0.81	0.73	0.66	0.58	0.49	0.39	0.28	0.00	67
137	2.78	2.75	2.73	2.70	2.67	2.64	2.61	2.58	2.55	2.52	2.49	2.46	2.43	2.40	2.37	2.34	2.31	2.24	2.17	2.00	65
139	1.73	1.65	1.58	1.51	1.43	1.35	1.28	1.20	1.13	1.05	0.98	0.90	0.83	0.75	0.68	0.60	0.51	0.41	0.30	0.00	63
141	2.80	2.77	2.75	2.72	2.69	2.66	2.63	2.60	2.57	2.54	2.51	2.48	2.45	2.42	2.39	2.36	2.33	2.26	2.19	2.00	61
143	1.75	1.67	1.60	1.53	1.45	1.37	1.30	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.70	0.62	0.53	0.43	0.32	0.00	59
145	2.82	2.79	2.77	2.74	2.71	2.68	2.65	2.62	2.59	2.56	2.53	2.50	2.47	2.44	2.41	2.38	2.35	2.28	2.21	2.00	57
147	1.77	1.69	1.62	1.55	1.47	1.39	1.32	1.24	1.17	1.09	1.02	0.94	0.87	0.79	0.72	0.64	0.55	0.45	0.34	0.00	55
149	2.84	2.81	2.79	2.76	2.73	2.70	2.67	2.64	2.61	2.58	2.55	2.52	2.49	2.46	2.43	2.40	2.37	2.30	2.23	2.00	53
151	1.79	1.71	1.64	1.57	1.49	1.41	1.34	1.26	1.19	1.11	1.04	0.96	0.89	0.81	0.74	0.66	0.57	0.47	0.36	0.00	51
153	2.86	2.83	2.81	2.78	2.75	2.72	2.69	2.66	2.63	2.60	2.57	2.54	2.51	2.48	2.45	2.42	2.39	2.32	2.25	2.00	49
155	1.81	1.73	1.66	1.59	1.51	1.43	1.36	1.28	1.21	1.13	1.06	0.98	0.91	0.83	0.76	0.68	0.59	0.49	0.38	0.00	47
157	2.88	2.85	2.83	2.80	2.77	2.74	2.71	2.68	2.65	2.62	2.59	2.56	2.53	2.50	2.47	2.44	2.41	2.34	2.27	2.00	45
159	1.83	1.75	1.68	1.61	1.53	1.45	1.38	1.30	1.23	1.15	1.08	1.00	0.93	0.85	0.78	0.70	0.61	0.51	0.40	0.00	43
161	2.90	2.87	2.85	2.82	2.79	2.76	2.73	2.70	2.67	2.64	2.61	2.58	2.55	2.52	2.49	2.46	2.43	2.36	2.29	2.00	41
163	1.85	1.77	1.70	1.63	1.55	1.47	1.40	1.32	1.25	1.17	1.10	1.02	0.95	0.87	0.80	0.72	0.63	0.53	0.42	0.00	39
165	2.92	2.89	2.87	2.84	2.81	2.78	2.75	2.72	2.69	2.66	2.63	2.60	2.57	2.54	2.51	2.48	2.45	2.38	2.31	2.00	37
167	1.87	1.79	1.72	1.65	1.57	1.49	1.42	1.34	1.27	1.19	1.12	1.04	0.97	0.89	0.82	0.74	0.65	0.55	0.44	0.00	35
169	2.94	2.91	2.89	2.86	2.83	2.80	2.77	2.74	2.71	2.68	2.65	2.62	2.59	2.56	2.53	2.50	2.47	2.40	2.33	2.00	33
171	1.89	1.81	1.74	1.67	1.59	1.51	1.44	1.36	1.29	1.21	1.14	1.06	0.99	0.91	0.84	0.76	0.67	0.57	0.46	0.00	31
173	2.96	2.93	2.91	2.88	2.85	2.82	2.79	2.76	2.73	2.70	2.67	2.64	2.61	2.58	2.55	2.52	2.49	2.42	2.35	2.00	29
175	1.91	1.83	1.76	1.69	1.61	1.53	1.46	1.38	1.31	1.23	1.16	1.08	1.01	0.93	0.86	0.78	0.69	0.59	0.48	0.00	27
177	2.98	2.95	2.93	2.90	2.87	2.84	2.81	2.78	2.75	2.72	2.69	2.66	2.63	2.60	2.57	2.54	2.51	2.44	2.37	2.00	25
179	1.93	1.85	1.78	1.71	1.63	1.55	1.48	1.40	1.33	1.25	1.18	1.10	1.03	0.95	0.88	0.80	0.71	0.61	0.50	0.00	23</

119	4.70	4.58	4.46	4.34	4.22	4.10	3.98	3.86	3.73	3.61	3.49	3.37	3.25	3.13	3.01	2.89	2.77	2.65	2.53	2.41
121	4.61	4.49	4.37	4.24	4.12	4.00	3.88	3.76	3.64	3.52	3.40	3.28	3.16	3.04	2.92	2.80	2.68	2.56	2.44	2.32
123	4.94	4.81	4.68	4.56	4.43	4.30	4.18	4.05	3.92	3.80	3.67	3.54	3.42	3.29	3.16	3.04	2.91	2.78	2.66	2.53
125	5.06	4.94	4.81	4.68	4.55	4.42	4.29	4.16	4.03	3.90	3.77	3.64	3.51	3.38	3.25	3.12	2.99	2.86	2.73	2.60
127	5.20	5.07	4.93	4.80	4.67	4.53	4.40	4.27	4.13	4.00	3.87	3.73	3.60	3.47	3.33	3.20	3.07	2.93	2.80	2.67
129	5.34	5.21	5.07	4.93	4.79	4.66	4.52	4.38	4.25	4.11	3.97	3.84	3.70	3.56	3.42	3.29	3.15	3.01	2.88	2.74
131	5.49	5.35	5.21	5.07	4.93	4.79	4.65	4.51	4.37	4.23	4.08	3.94	3.80	3.66	3.52	3.38	3.24	3.10	2.96	2.82
133	5.65	5.51	5.36	5.22	5.07	4.93	4.78	4.64	4.49	4.35	4.20	4.06	3.91	3.77	3.62	3.48	3.33	3.19	3.04	2.90
135	5.82	5.67	5.52	5.37	5.22	5.07	4.93	4.78	4.63	4.48	4.33	4.18	4.03	3.88	3.73	3.58	3.43	3.28	3.13	2.99
137	6.00	5.85	5.69	5.54	5.38	5.23	5.08	4.92	4.77	4.62	4.46	4.31	4.15	4.00	3.85	3.69	3.54	3.38	3.23	3.08
139	6.19	6.03	5.87	5.71	5.56	5.40	5.24	5.08	4.92	4.76	4.60	4.44	4.29	4.13	3.97	3.81	3.65	3.49	3.33	3.17
141	6.39	6.23	6.07	5.90	5.74	5.57	5.41	5.25	5.08	4.92	4.75	4.59	4.43	4.26	4.10	3.93	3.77	3.61	3.44	3.28
143	6.61	6.44	6.27	6.10	5.93	5.76	5.59	5.42	5.25	5.08	4.92	4.75	4.58	4.41	4.24	4.07	3.90	3.73	3.56	3.39
145	6.84	6.67	6.49	6.32	6.14	5.96	5.79	5.61	5.44	5.26	5.09	4.91	4.74	4.56	4.39	4.21	4.04	3.86	3.68	3.51
147	7.09	6.91	6.73	6.55	6.36	6.18	6.00	5.82	5.64	5.45	5.27	5.09	4.91	4.73	4.55	4.36	4.18	4.00	3.82	3.64
149	7.36	7.17	6.98	6.79	6.60	6.42	6.23	6.04	5.85	5.66	5.47	5.28	5.09	4.91	4.72	4.53	4.34	4.15	3.96	3.77
151	7.65	7.45	7.25	7.06	6.86	6.67	6.47	6.27	6.08	5.88	5.69	5.49	5.29	5.10	4.90	4.71	4.51	4.31	4.12	3.92
153	7.96	7.76	7.55	7.35	7.14	6.94	6.73	6.53	6.33	6.12	5.92	5.71	5.51	5.31	5.10	4.90	4.69	4.49	4.29	4.08
155	8.30	8.09	7.87	7.66	7.45	7.23	7.02	6.81	6.60	6.38	6.17	5.96	5.74	5.53	5.32	5.11	4.89	4.68	4.47	4.26
157	8.67	8.44	8.22	8.00	7.78	7.56	7.33	7.11	6.89	6.67	6.44	6.22	6.00	5.78	5.56	5.33	5.11	4.89	4.67	4.44
159	9.07	8.84	8.60	8.37	8.14	7.91	7.67	7.44	7.21	6.99	6.74	6.51	6.28	6.05	5.81	5.58	5.35	5.12	4.88	4.65
161	9.51	9.27	9.02	8.78	8.54	8.29	8.05	7.80	7.56	7.32	7.07	6.83	6.59	6.34	6.10	5.85	5.61	5.37	5.12	4.88
163	9.99	9.74	9.49	9.23	8.97	8.72	8.46	8.21	7.95	7.69	7.44	7.18	6.92	6.67	6.41	6.15	5.90	5.64	5.38	5.13
165	10.47	10.22	9.97	9.73	9.48	9.23	8.98	8.73	8.48	8.23	7.98	7.73	7.48	7.23	6.98	6.73	6.48	6.23	5.98	5.73
167	10.95	10.70	10.45	10.20	9.95	9.70	9.45	9.20	8.95	8.70	8.45	8.20	7.95	7.70	7.45	7.20	6.95	6.70	6.45	6.20
169	11.43	11.18	10.93	10.68	10.43	10.18	9.93	9.68	9.43	9.18	8.93	8.68	8.43	8.18	7.93	7.68	7.43	7.18	6.93	6.68
171	11.91	11.66	11.41	11.16	10.91	10.66	10.41	10.16	9.91	9.66	9.41	9.16	8.91	8.66	8.41	8.16	7.91	7.66	7.41	7.16
173	12.39	12.14	11.89	11.64	11.39	11.14	10.89	10.64	10.39	10.14	9.89	9.64	9.39	9.14	8.89	8.64	8.39	8.14	7.89	7.64
175	12.87	12.62	12.37	12.12	11.87	11.62	11.37	11.12	10.87	10.62	10.37	10.12	9.87	9.62	9.37	9.12	8.87	8.62	8.37	8.12
177	13.35	13.10	12.85	12.60	12.35	12.10	11.85	11.60	11.35	11.10	10.85	10.60	10.35	10.10	9.85	9.60	9.35	9.10	8.85	8.60

119	2.29	2.17	2.05	1.93	1.81	1.69	1.57	1.45	1.33	1.20	1.08	0.96	0.84	0.72	0.60	0.48	0.36	0.24	0.12	0.00
121	3.40	3.32	3.25	3.14	3.10	3.03	2.95	2.88	2.81	2.73	2.66	2.59	2.51	2.44	2.37	2.29	2.22	2.15	2.07	2.00
123	2.35	2.27	2.19	2.08	2.05	1.97	1.89	1.82	1.75	1.67	1.60	1.52	1.44	1.37	1.29	1.22	1.14	1.07	1.00	0.92
125	3.46	3.34	3.30	3.23	3.15	3.07	3.00	2.92	2.84	2.77	2.69	2.61	2.54	2.46	2.38	2.31	2.23	2.15	2.08	2.00
127	2.41	2.29	2.15	2.03	1.90	1.77	1.65	1.52	1.39	1.27	1.14	1.01	0.89	0.76	0.63	0.51	0.38	0.25	0.13	0.00
129	3.52	3.40	3.36	3.28	3.20	3.12	3.04	2.96	2.88	2.80	2.72	2.64	2.56	2.48	2.40	2.32	2.24	2.16	2.08	2.00
131	2.47	2.34	2.21	2.08	1.95	1.82	1.69	1.56	1.43	1.30	1.17	1.04	0.91	0.78	0.65	0.52	0.39	0.26	0.13	0.00
133	3.58	3.51	3.42	3.33	3.25	3.17	3.08	3.00	2.92	2.83	2.75	2.67	2.58	2.50	2.42	2.33	2.25	2.17	2.08	2.00
135	2.45	2.41	2.33	2.25	2.17	2.09	2.01	1.92	1.84	1.76	1.68	1.60	1.51	1.43	1.35	1.26	1.18	1.10	1.02	0.94
137	3.43	3.37	3.27	3.19	3.11	3.03	2.95	2.87	2.79	2.71	2.63	2.55	2.47	2.39	2.31	2.23	2.15	2.07	1.99	1.91
139	2.02	2.07	2.02	1.96	1.91	1.85	1.79	1.73	1.67	1.61	1.55	1.49	1.43	1.37	1.31	1.25	1.19	1.13	1.07	1.01
141	3.11	2.95	2.79	2.62	2.46	2.30	2.13	1.97	1.80	1.64	1.48	1.31	1.15	0.98	0.82	0.65	0.49	0.33	0.16	0.00
143	3.02	3.05	2.88	2.71	2.54	2.37	2.20	2.03	1.86	1.69	1.53	1.36	1.19	1.02	0.85	0.68	0.51	0.34	0.17	0.00
145	3.33	3.15	2.99	2.81	2.63	2.46	2.28	2.11	1.93	1.75	1.58	1.40	1.23	1.05	0.88	0.70	0.53	0.35	0.18	0.00
147	3.45	3.27	3.09	2.91	2.73	2.55	2.36	2.18	2.00	1.82	1.64	1.45	1.27	1.09	0.91	0.73	0.55	0.36	0.18	0.00
149	3.73	3.51	3.33	3.14	2.94	2.75	2.55	2.35	2.16	1.96	1.74	1.57	1.37	1.18	0.98	0.78	0.59	0.39	0.20	0.00
151	3.88	3.67	3.47	3.27	3.06	2.85	2.65	2.45	2.24	2.04	1.84	1.63	1.43	1.22	1.02	0.82	0.61	0.41	0.20	0.00
153	4.04	3.83	3.62	3.40	3.19	2.98	2.77	2.55	2.34	2.13	1.91	1.70	1.49	1.28	1.06	0.85	0.64	0.43	0.21	0.00
155	4.22	4.01	3.79	3.56	3.33	3.11	2.89	2.67	2.44	2.22	2.00	1.78	1.56	1.33	1.11	0.89	0.67	0.44	0.22	0.00
157	4.42	4.19	3.95	3.72	3.49	3.26	3.02	2.79	2.56	2.33	2.09	1.86	1.63	1.40	1.16	0.93	0.70	0.47	0.23	0.00
159	4.63	4.39	4.15	3.90	3.66	3.41	3.17	2.93	2.68	2.44	2.20	1.95	1.71	1.46	1.22	0.98	0.73	0.49	0.24	0.00
161	4.87	4.62	4.36	4.10	3.85	3.59	3.33	3.08	2.82	2.56	2.31	2.05	1.79	1.54	1.28	1.03	0.77	0.51	0.26	0.00
163	5.14	4.84	4.59	4.32	4.05	3.78	3.51	3.24	2.97	2.70	2.43	2.16	1.89	1.62	1.35	1.08	0.81	0.54	0.27	0.00
165	5.43	5.13	4.86	4.57	4.29	4.00	3.71	3.43	3.14	2.86	2.57	2.29	2.00	1.71	1.43	1.14	0.84	0.57	0.29	0.00
167	5.76	5.45	5.15	4.85	4.55	4.24	3.94	3.64	3.33	3.03	2.73	2.42	2.12	1.82	1.52	1.21	0.91	0.61	0.30	0.00
169	6.13	5.81	5.48	5.16	4.84	4.52	4.19	3.87	3.55	3.23	2.91	2.58	2.26	1.94	1.61	1.29	0.97	0.65	0.32	0.00
171	6.55	6.21	5.86	5.52	5.17	4.83	4.48	4.14	3.79	3.45	3.10	2.76	2.41	2.07	1.72	1.38	1.03	0.69	0.34	0.00
173	7.04	6.67	6.30	5.93	5.56	5.19	4.81	4.44	4.07	3.70	3.33	2.95	2.59	2.22	1.85	1.48	1.11	0.74	0.37	0.00
175	7.60	7.20	6.80	6.40	6.00	5.60	5.20	4.80	4.40	4.00	3.60	3.20	2.80	2.40	2.00	1.60	1.20	0.80	0.40	0.00
177	8.26	7.83	7.39	6.96	6.52	6.09	5.65	5.22	4.78	4.35	3.91	3.48	3.04	2.61	2.17	1.74	1.30	0.87	0.43	0.00

